

present position of the dynamo from both a theoretical and a practical point of view.

The first of the more important biological articles included in the volume is one on Coelentera, by Dr. G. H. Fowler, in which it is shown how much our conception of this group has altered since the date of the previous issue. The colours of animals are treated of by Prof. E. B. Poulton, who lays emphasis on the advance of our knowledge with regard to the object of the general coloration of mammals and birds. Crustacea are described by the Rev. T. R. Stebbing, Ctenophora by Dr. Fowler, and cuttlefish by the Rev. J. F. Blake. In the genealogical table accompanying the latter article it is noticeable that Octopus (or rather Polypus) is regarded as the descendant of an ammonite of the Hoplites group, and also that the author accepts the view of one or two German writers as to the homology of the argonaut shell with that of an ammonite. The Echinodermata (called Echinoderma in the table of contents) are elaborately treated by Dr. F. A. Bather, while Mr. A. E. Shipley is responsible for that small marine group known as Echiurids, and, from the presence of segmentation in larval life, sometimes classed as Annelids.

The very important subject of economic insects falls to the lot of Prof. F. V. Theobald, but limitations of space render his article all too short. Recent investigations into the breeding-habits of the eel and the discovery of the real nature of "leptocephali" have enabled Mr. J. T. Cunningham to render the article "Eel" one of especial interest. The only botanical subject is cytology (vegetable), for which Mr. H. W. T. Wager is responsible.

ASPECTS OF MEDICAL SCIENCE.

Pathologie générale et expérimentale. Les Processus généraux. Par A. Chantemesse and W. W. Podwyssotsky. Pp. xiv + 428; 162 figures. (Paris: G. Naud, 1901.)

Matière médicale zoologique, Histoire des Drogues d'Origine animale. Par H. Beauregard, Professeur à l'École supérieure de Pharmacie de Paris. Révisé par M. Coutière, with a preface by M. D'Arsonval. Pp. xxxi + 396; numerous plates and illustrations. (Paris: G. Naud, 1901.) Price fr. 12.

Chemische und medicinische Untersuchungen. Festschrift zur des sechzigsten Geburtstages von Max Jaffé. Pp. 472; 7 plates. (Braunschweig: Vieweg u. Sohn, 1901.)

Das Wirbeltierblut in mikrokristallographischer Hinricht. Von Dr. med. H. U. Kobert. Mit einem Vorworte von Prof. R. Kobert. Pp. 108; 26 figures. (Stuttgart: Ferdinand Enke, 1901.)

THE first book before us is the first volume of a system of general and experimental pathology. In an academically written preface of ten pages, the authors explain the object of the book, pointing out the extreme value of comparative experimental pathology in elucidating the prime problems of morbid processes in the human subject. In especial the authors cite the work of Pasteur on silkworm parasites, and that also of Metchnikoff on the effects of irritants upon low forms of life. Equally well might the recent researches upon

the causation of malaria have found a mention in this connection. M. Chantemesse's Russian collaborator, M. Podwyssotsky, has already published in Russian a general experimental pathology covering similar ground to the volume under consideration. The present work, however, is much more extensive, both with regard to the letterpress and figures, and can in no sense be regarded as a translation from the Russian.

It is impossible in a short review to enter adequately into the subject-matter of so compendious a volume, and little more than a table of contents can be given. More than half the space is devoted to the degenerations, which are treated very fully, each having appended to it a copious, we were going to say appalling, bibliography. These huge lists of papers bearing on the corresponding subject are really the more appalling in that upon glancing through them it at once becomes evident that they are more complete with regard to French and Russian workers than with regard to German and English ones. Judging from them and the text, it appears that the authors are not well acquainted with current English scientific literature, as the number of English authors quoted is very small, and the same cannot be said of the English work done upon the subject in question. Certainly one, and in the reviewer's opinion not the least, of the advantages of the book is that it makes accessible to a cosmopolitan public a mass of Russian work, evidently of great value, which otherwise, on account either of its language or its inaccessibility, might have easily escaped the observation of workers in the field of experimental pathology, to their and their readers' detriment.

Under the degenerations are included goitre and cretinism, the authors giving, concerning these affections, an interesting series of experiments upon the effect of the water of the district upon endemic goitre. Saint Jean de Maurienne is apparently one of the most goitrous districts of France, and the waters here have actually the reputation of producing goitre, and are resorted to with success by certain individuals anxious to avoid compulsory military service. Glycosuria is discussed under glycogenic degeneration. An interesting section is devoted to watery and vacuolar degeneration, which includes a detailed description, with very beautiful illustrations, of the vacuolisation of the cells of the central nervous system under the influence of certain toxins and drugs.

The book throughout is written in a most lucid and attractive style, and in a distinctly philosophical manner. The amount of subject-matter treated is very great, and even subjects having little more than an indirect bearing upon the main theme of the book are exhaustively discussed. Some idea of the extent to which this is done may perhaps be formed in noting that no less than fifty pages are devoted to the subject of heredity, and that under this division of their subject the authors include a lengthy discussion of the views of Weissmann. The subject of argyrosis, or general pigmentation following the administration of silver salts, occupies six pages, and has appended to it a copious bibliography.

The reviewer regrets that the references in the bibliographies are not numbered, even when quoted in the text; reference to any given paper is by this fact

rendered very difficult. This difficulty is exaggerated since the position of any given name in the bibliography quoted in the text is not determined alphabetically, but by the date of the corresponding paper. This chronological arrangement of the bibliographies may possibly render them more valuable as entities, but certainly renders them more unwieldy for the purpose of their true function, viz. their reference to the text.

The volume is exceedingly well printed and provided amply with illustrations, often of preparations made by the authors, the execution of which leaves little to be desired. The book will certainly rank as a standard work of reference, and if the high efficiency of the present volume be maintained by its successors will certainly be accorded an emphatic welcome by all pathologists. The authors and the publishers are distinctly to be congratulated upon what can only be the result of labour at once skilful and unremitting.

The second work under notice is a posthumous one. As all interested in pharmacy in France know, M. Beauregard died some months before the publication of his "Matière médicale zoologique." Up to the very last, however, he took the keenest interest in it, and it is pathetic to note from the introduction that the proof sheets were corrected by the author upon the sick bed from which he was never to rise. The author is well known for his researches upon pharmaceutical subjects; these have, further, been in large measure directed to products of animal origin. Especially should his work upon the animal vesicants and upon the animal perfumes find mention here.

The volume which is the object of this review is a compendious book of reference upon all substances used, not only in pharmacy, but also in perfumery, which owe their origin to the animal kingdom. It must be at once observed that the information in the book is for the most part zoological, and that the chemistry of the products in question is not entered into at all fully. In many instances there is little to be said from the chemical side, but it is well to remark that from the chemical standpoint the book cannot be considered as comprising all that is known. Cod liver oil and musk are to some extent exceptions. Under cod liver oil the author gives an account of Gautier's work on the alkaloids contained in this substance, but no mention is made of Hegerdahl's researches on the chemical composition of the fatty constituents of the oil. Under musk an interesting paragraph is added upon artificial musks; nine synthetic substances, mostly butyltoluene derivatives, are mentioned which approach more or less closely to musk in smell. These substances, however, all differ from the natural musk (the preputial secretion from a variety of reindeer) in being less lasting. The extraordinary way in which musk keeps its smell renders this substance very valuable. The trade in this commodity is considerable, and in France is certainly increasing; in 1895, 686 cattles (604 grammes) were imported into France and 465 into London. At the present time musk fetches about 100*l.* a kilogramme.

Amongst other substances which are treated very exhaustively from the zoological side may be mentioned spermaceti, the crystalline fat derived from the head of the sperm whale, and the rare substance ambergris.

The literature of ambergris is very small, and M. Beauregard has certainly added very considerably to it. It appears that this interesting substance is an intestinal concretion occurring in certain whales. Ambergris is not employed in medicine, but is very much prized in perfumery on account of the property it possesses, although itself odourless, of reinforcing the scent of other substances. The chief market for ambergris is apparently at Boston, and some idea of its value may be formed from the fact that it sometimes fetches as much as 280*l.* the kilogramme.

The vesicant insects, *Cantharis vesicatoria* and its immediate allies, are, as was to be expected, treated very fully. The book concludes with a chapter devoted to the sponges.

From the above somewhat disjointed review it will be seen that M. Beauregard has for his last work produced a valuable addition to the literature of a subject concerning which not much has been written. We are afraid the limited number of readers to which the book will appeal will render the sale of it relatively small; be this as it may, the gratitude of those interested in the subject is due to the author for having collected in a most readable volume the scattered work of many observers, among which must be mentioned his own.

The German custom of celebrating the birthdays of professors by publishing a collection of papers by their collaborators and pupils has many advantages. The collection of monographs published to celebrate the sixtieth birthday of Prof. Max Jaffé by his former collaborators and pupils, although not quite so compendious as many of its forerunners, nevertheless contains an interesting collection of papers. The subject-matter may roughly be divided into three parts. The first series of papers is chiefly devoted to clinical medicine, and is written, for the most part, by old collaborators of Prof. Jaffé who have become famous as clinicians. Amongst these may be mentioned Prof. Leyden, who contributes an article upon the therapeutics of oxygen, and Prof. Nothnagel, from whose pen comes a most useful essay upon intestinal hæmorrhage.

The second series of papers, the shortest in the book, comprises three essays upon pathological, morbid anatomical and embryological subjects.

The third part of the book, occupying more than half its entire bulk, is essentially experimental. The first essay seems to be an entirely chemical one. Dr. Salkowski contributes an article upon the chemical composition of hydrocephalus fluid; he draws attention to the fact that the fluid is different in acute and chronic cases in so far as concerns its content of potash salts. He regards the excess in potash salts of acute hydrocephalus fluid as due to the fever which accompanies the acute variety. Normal urine contains, according to this author, only 21 per cent. of the sum of potash and soda salts as potash salts, whereas in fever urine 87 per cent. of this sum consists of potash salts.

An interesting piece of work by Dr. Rudolf Cohn, on the glycol-col-store of the organism, comes from the Laboratory of Experimental Pharmacology and Medical Chemistry at Königsberg. It is a contribution to the study of intermediate tissue change. The work consists essentially of a repetition, by other methods, of that of Hugo

Wiener. The fact that benzoic acid is converted by the organism into hippuric acid, and is poisonous only in so far as it is not so converted, is made use of to estimate the quantity of glycol present in the organism under different conditions at any given time. The result of the researches, in the author's opinion, shows that in rabbits the store of glycol is neither small nor constant, and that it bears a constant relationship to proteid katabolism; further, that this relationship appears to be the same whether the proteid material be katabolised in the animal body or by external chemical means.

Prof. Hans Meyer, conjointly with Dr. J. T. Halsey and Dr. F. Ransom, contributes a paper on tetanus. The stimulus to this research appears to have been the work of Courmont and Doyon upon the influence of temperature upon the development of tetanus after the injection of the tetanus toxin. The results of Meyer and his collaborators are in the main confirmatory of those of the earlier observers, and appear to show distinctly that cold has a marked preventive influence upon the development of tetanus in animals after the injection of tetanus toxin. These results point, according to Ehrlich and his school, to the fact that the "toxophore" group, in the case of tetanus, develops slowly, and only at relatively high temperatures. The nearest poison of known chemical composition to the tetanus toxin is strychnine, and Koeninck has shown that the development of the symptoms of strychnine poisoning in animals is independent of the temperature.

The book contains other interesting essays, which the space at our command does not permit us to review.

Dr. Kobert's pamphlet is intended primarily for those interested in the medico-legal detection of blood, and consists for the most part of a compilation of the facts at present known upon this subject, culled from the appropriate original works. In some respects, however, it is original, especially with regard to the description and figure of hæmochromogen crystals, and hence will in this sense be possibly of use to physiological chemists generally. The book apparently owes its origin to a practical course upon the detection of blood stains which Prof. Kobert gave himself, and which in a much less complete form appeared in *Zeitschrift für angewandte Mikroskopie*.

The first few pages of the monograph are devoted to the interesting subject of the mutuality of iron and copper with regard to the blood pigment. It is a known fact that in certain invertebrata the blood performs its respiratory function through a copper compound. This physiological equivalence of copper and iron in this respect is distinctly of interest in connection with the supposed toxic effect of copper.

A considerable space is devoted to the interesting substance hæmatoporphyrin, which occurs in human urine especially after the administration of sulphonal, a very commonly used hypnotic. The relation of hæmopyrrol (methyl propyl pyrrol) to hæmoglobin and chlorophyll is also discussed in the light of the work of Marchlewski and Schunck.

A short section is devoted to blood serum crystals, and the pamphlet concludes with a concise bibliographical and general index.

The booklet is certainly thoroughly written, and will

be found useful by those especially interested in this somewhat limited field, as well as of practical use in guiding the medical jurist with regard to method.

F. W. T.

CHEMICAL ESSAYS.

Essays in Historical Chemistry. By T. E. Thorpe, C.B., LL.D., F.R.S. Pp. xii + 582. (London: Macmillan and Co., Ltd., 1902.) Price 12s. net.

IT is always a pleasure to read any of Dr. Thorpe's essays; in this volume a number of them, delivered on very different occasions, at intervals during the last twenty-five years, have been collected. Some have been published in book form before, but several, which are to be found in the present work, are reprinted from *NATURE* and from the *Transactions* of the Chemical Society.

The first essay—that on Robert Boyle, "the father of modern chemistry"—displays Dr. Thorpe's admirable style at its best. One is struck by the great wealth of allusion to contemporary events, touched lightly, it is true, but none the less giving a clear impression of the times in which the subject of the essay lived, and of the surroundings in which he carried on his work. Dr. Thorpe possesses, too, a happy knack of apt quotation; the particular passage from a writer of prose or poetry which best illustrates the point which he wishes to make flows easily from his pen, and gives much interest and spice to his narratives. The essay on Boyle is a sketch; much that is interesting is omitted, and there is plenty of room for other essays on Boyle; but what is told is written in such an attractive style, and gives such a perfect picture of the quiet, meditative philosopher—*philaretus*, or the friend of virtue, as he calls himself in a passage which might with advantage have been quoted—that to complain of a lack of completeness would be to appear to undervalue what is given.

Dr. Priestley is the subject of the next sketch. Again the same careful delineation of character is to be noted; but perhaps in the life of Scheele, the subject of the third essay, Dr. Thorpe is at his best. It is hardly fair, however, to the shades of Mayow to credit Dr. Priestley with the invention of the pneumatic trough, although the name, doubtless, is due to him; for Mayow's *Tractatus quinque* contain many illustrations of that convenient appliance.

In the essay on Cavendish, a delightful picture is given of an imaginary soirée at the house of Sir Joseph Banks:—

"The portly visitor, with the large frill, makes his way upstairs, to the evident embarrassment of a thin middle-aged gentleman in an old-fashioned Court-dress of faded violet, and a knocker-tailed periwig, who is moving uneasily about on the landing, evidently afraid to face the assembly. The approach of the gentleman on the stairs, however, drives him into the room. He shuffles quickly from place to place, his manner is awkward; his face betrays a nervous irritation of mind, and he appears annoyed if looked at. It is the Honourable Mr. Cavendish. Finding himself close to a group, evidently, from the appearance which their faces wear, speaking of a deeply important matter, he draws near to listen. They are talking of a rumour of some grave disaster which has befallen my Lord Cornwallis and his troops, who it